

We'll expand about the first row since there are no zeros to exploit,

$$\begin{aligned}
 \langle \text{error} | \text{compound vmatrix} \rangle &= (-2) \langle \text{vmatrix} \begin{array}{cc} -2 & 1 \\ 4 & 2 \end{array} \rangle + (-1)(3) \langle \text{vmatrix} \begin{array}{cc} -4 & 1 \\ 2 & 2 \end{array} \rangle + (-2) \langle \text{vmatrix} \begin{array}{cc} -4 & -2 \\ 2 & 4 \end{array} \rangle \\
 &= (-2)((-2)(2) - 1(4)) + (-3)((-4)(2) - 1(2)) + (-2)((-4)(4) - (-2)(2)) \\
 &= (-2)(-8) + (-3)(-10) + (-2)(-12) = 70
 \end{aligned}$$

Desarrollando a lo largo de la primera fila, ya que no hay ceros:

$$\begin{aligned}
 &(-2) \begin{bmatrix} -2 & 1 \\ 4 & 2 \end{bmatrix} + (-1)(3) \begin{bmatrix} -4 & 1 \\ 2 & 2 \end{bmatrix} + (-2) \begin{bmatrix} -4 & -2 \\ 2 & 4 \end{bmatrix} \\
 &= (-2)((-2)(2) - (4)(1)) + (-3)((-4)(2) - (2)(1)) + (-2)((-4)(4) - (2)(-2)) \\
 &= (-2)(-8) + (-3)(-10) + (-2)(-12) = 70
 \end{aligned}$$